

## CLAIMS

What is claimed is:

1. An apparatus for generating an optical recording pulse having a first pulse, a multi-pulse chain, and a last pulse to form a domain in an optical medium, comprising:
  - a recording pulse generator generating said optical recording pulse; and
  - a controller controlling said recording pulse generator so that according to the type of said optical medium or a recording speed of said optical medium, said multi-pulse chain has a plurality of pulses with at least two different widths used to create a mark.
2. The apparatus of claim 1, wherein said controller determines whether said plurality of pulses having said two different widths should exist in said multi-pulse chain of said optical recording pulse.
3. The apparatus of claim 1, wherein said controller determines each width of respective pulses of said multi-pulse chain when a constant angular velocity recording method has been used in said optical medium.
4. The apparatus of claim 1, wherein said controller determines each width of the pulses of said multi-pulse chain during initialization of said optical medium.
5. The apparatus of claim 1, further comprising a non return to zero inverted (NRZI) data detector detecting the type of NRZI data and controlling said recording pulse generator to generate said optical recording pulse in response to said NRZI data.
6. The apparatus of claim 1, wherein said controller sets said widths of said plurality of pulses of said multi-pulse chain to a fixed value and a variable value less than the fixed value depending on said type of said optical medium or said recording speed of said optical medium.
7. The apparatus of claim 1, wherein said controller sets the widths of the said pulses of said multi-pulse chain to a fixed value and a variable value different from said fixed value.

8. A method of generating an optical recording pulse having a first pulse, a multi-pulse chain, and a last pulse, comprising:

setting a recording mode for forming a domain on an optical medium;

depending on the type of said optical medium or a recording speed of said optical medium, generating said multi pulse chain with a plurality of pulses having at least two different widths ; and

generating said optical recording pulse having said first pulse, said multi-pulse chain, and said last pulse.

9. The method of claim 8, further comprising determining whether said two different widths of the multi-pulses] said pulses of said multi-pulse chain should exist .

10. The method of claim 8, wherein the width of each pulse of said multi-pulse chain is based upon a constant angular velocity (CAV) recording method used for said optical medium.

11. The method of claim 8, wherein said multi-pulse chain is generated during initialization of said recording mode.

12. A method in an optical recoding apparatus, comprising:  
generating an optical recording pulse having a first pulse, a multi-pulse chain, and a last pulse, said multi pulse chain having a plurality of pulses with a plurality of widths; and  
forming a domain on an optical medium in accordance with said optical recoding pulse.

13. The method of claim 12, wherein said multi-pulse chain comprises a second pulse having a second width and a third pulse having a third width, said second and third widths being narrower than that of said first pulse and said last pulse.

14. The method of claim 12, wherein said multi-pulse chain comprises a plurality of second pulses having a second width and a plurality of third pulses having a third width different from said second width.

15. The method of claim 12, wherein said multi-pulse chain comprises three sets of pulses each set having a second width, a third width, and a fourth width, respectively, which are different from each other.

16. The method of claim 15, wherein said second, third, and fourth widths are narrower than that of said first pulse and said last pulse.

17. The method of claim 12, wherein one of said pulses of said multi-pulse chain has a width greater than that of one of said first pulse and said last pulse.

18. The method of claim 12, wherein one of said pulses of said multi-pulse chain has a width narrower than that of one of said first pulse and said last pulse while a second one of said pulses is wider than one of said first pulse and said second pulse.

19. The method of claim 12, wherein said multi-pulse chain comprises first and second sets of said pulses, said first set of pulses having a first width greater than that of said second set of said pulses, said first set of said pulses following said first pulse while said second set of said pulses are followed by said last pulse.

20. The method of claim 12, further comprising:  
receiving information representing a first length of a first domain and a second length of a second domain, said first length being greater than said second length;  
generating said multi-pulse chain when said information represents said first length; and  
generating a second multi-pulse having second pulses all having a second width when said information represents said second length.

21. The method of claim 12, further comprising:  
receiving information representing one of a first type of said optical medium and a second type of said optical medium;  
generating said multi-pulse chain when said information represents said first type; and  
generating a second multi-pulse having second pulses all having a second width when said information represents said second type.

22. The method of claim 12, further comprising:  
receiving information representing a constant angular velocity (CAV) recording process;  
generating said multi-pulse chain when said information represents said CAV recording process; and  
generating a second multi-pulse having second pulses all having a second width when said information does not represent said CAV recording process.

23. A method in an optical recording apparatus, comprising:  
generating an optical recording pulse having a first pulse, a multi-pulse chain having a plurality of pulses, and a last pulse;  
forming a domain on an optical medium in accordance with said optical recording pulse;  
receiving information corresponding to a length of a domain; and  
changing at least one of said pulses of said multi-pulse chain to have a width different from that of the other pulses of said multi-pulse chain in response to said length of said domain.

24. The method of claim 23, wherein said second width of said one of said pulses of said multi-pulse chain is greater than that of one of said first pulse and said last pulse.

25. The method of claim 23, wherein said second width of said one of said pulses is less than that of said one of said multi-pulse chain, said first pulse, and said last pulse.

26. The method of claim 23, further comprising:  
making a first determination of whether said length of said domain is greater than a reference;  
generating said one of said pulses inserted into said multi-pulse chain; and  
generating a second recording pulse having said first pulse, a second multi-pulse chain having a uniform width, and said last pulse when said length of said domain is less than said reference.

27. A method in an optical recording apparatus, comprising:

preparing a recording pulse including first pulse having a first width, a multi-pulse chain having a second pulse having a second width and a third pulse having a third width, and a last pulse having a last width in order, said second width of said second pulse being different from said third width of said third pulse, said recording pulse corresponding to a length of a domain which is formed on an optical medium.

28. The method of claim 27, further comprising generating said recording pulse in response to said length of said domain greater than a minimum length.

29. The method of claim 27, further comprising generating a second recording pulse including said first pulse, a second multi-pulse chain having a fourth pulse with a fourth width different from one of said second width of said second pulse and said third widths of said third pulse, and said last pulse in order in response to said length of said domain less than a reference.

30. The method of claim 27, further comprising preparing a second recording pulse including said first pulse, a second multi-pulse chain having a fourth pulse with a fourth width less than said second and third widths, and said last pulse in order, said second recording pulse corresponding to a second length of a second domain which is formed on said optical medium, wherein said second length of said second domain is less than said length of said domain.

31. A method in an optical recording apparatus for forming a domain on an optical medium, comprising:

preparing a first recording pulse including a first pulse having a first width, a multi-pulse chain having at least two pulses with a second width and a third width different from said second width, and a last pulse having a last width in order;

preparing a second recording pulse including a second multi-pulse chain having a pulse with a fourth width different from one of said second and third widths, and a second last pulse in order;

generating said first recording pulse in response to a length of said domain greater than a reference; and

generating said second recording pulse in response to said length of said domain less than said reference.

32. The method of claim 31, wherein said domain represents a non-return to zero inverted data to be recorded on said optical medium.

33. A method in an optical recording apparatus for forming a domain on an optical medium, comprising:

preparing a first recording pulse including first pulse having a first width, a multi-pulse chain having at least two of a second pulse having a second width, a third pulse having a third width, and a fourth pulse having a fourth width, and a last pulse having a last width in order, said second width of said second pulse different from said third and fourth widths; and  
generating said recording pulse when a constant angular velocity recording process is used for said optical medium.

34. The method of claim 33, further comprising:

preparing a second recording pulse including a second first pulse, a second multi-pulse chain having a fifth pulse having a fifth width and a sixth pulse with a sixth width, and a second last pulse in order; and  
generating said second recording pulse when said constant angular velocity recording process is not used for said optical medium.

35. A method in an optical recording apparatus for forming a domain on an optical medium, comprising the operations of:

preparing a first recording pulse including first pulse having a first width, a multi-pulse chain having at least two of a second pulse having a second width, a third pulse having a third width, and a fourth pulse having a fourth width, and a last pulse having a last width in order, said second, third, and fourth widths being different from each other; and  
generating said recording pulse in response to either one of a length of said domain and a recording speed of said domain for forming said domain representing data to be recorded on said optical medium.

36. The method of claim 35, wherein said recording speed represents a constant angular velocity recording process.

37. The method of claim 35, wherein said length of said domain is not a minimum length formed on said optical medium.

38. The method of claim 35, wherein said length of said domain represents non-return to zero inverted data.

39. A method in an optical recording apparatus for forming a domain on an optical medium, comprising:

preparing a first recording pulse including first pulse having a first width, a multi-pulse chain having a second pulse having a second width and a third pulse having a third width, and a last pulse having a last width in order, said second width of said second pulse different from said third width of said third pulse; and

generating said recording pulse in response to either one of a length of said domain and a recording speed of said domain for forming said domain representing data to be recorded on said optical medium.

40. The method of claim 39, further comprising the operations of:  
providing a fourth pulse having a fourth width;

generating a second recording pulse having said fourth pulse inserted into said multi-pulse chain when said domain is formed on an outside area of said optical medium while said recording pulse not having said fourth pulse is generated when said domain is formed on an inside area of said optical area, wherein said outside area is greater than said inside area in diameter.

41. The method of claim 39, wherein said first pulse, said multi-pulse chain, and said last pulse have the same height.

42. An apparatus for generating an optical recording pulse for forming a domain on an optical medium, comprising:

a recording pulse generator generating said optical recording pulse having a first pulse, a multi-pulse chain having a second pulse with a second width, and a last pulse in response to non-return to zero inverted data; and

a controller controlling said recording pulse generator to generate a third pulse with a third width different from said second width of said second pulse of said multi-pulse chain, said third pulse inserted into said multi-pulse chain of said optical recording pulse.

43. The apparatus of claim 42, wherein said third pulse is inserted between said second pulse and said last pulse.

44. The apparatus of claim 42, wherein said third pulse is inserted between said first pulse and said second pulse.

45. The apparatus of claim 42, said controller receiving from said optical medium information relating to one of a recording type of said optical medium and a recording speed of said optical medium, controlling said recording pulse generator to generate said multi-pulse chain in response to said information.

46. The apparatus of claim 42, wherein said multi-pulse chain is generated when a constant angular velocity recording method is used for said optical medium.

47. The apparatus of claim 42, wherein said multi-pulse chain is generated when a length of said domain is greater than a reference.

48. The apparatus of claim 42, wherein said multi-pulse chain is generated when said domain is formed on an outside area of said optical medium while said multi-pulse chain is not generated when said domain is formed on an inside area of said optical medium.